

CLEAN VERSION OF AMENDED SPECIFICATION PARAGRAPHS

FLEXIBLE TAPE ELECTRONICS PACKAGING

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The subtitle beginning on page 1, line 5.

Technical Field

The paragraph beginning on page 1, line 7.

A7 Embodiments of the present invention relate generally to electronics packaging and, more particularly to an electronic package that includes an integrated circuit packaged on a flexible tape substrate, and to manufacturing methods related thereto.

The subtitle beginning on page 1, line 12.

Background Information

The paragraph beginning on page 4, line 18.

A8 In the following detailed description of embodiments of the invention, reference is made to the accompanying drawings which form a part hereof, and in which are shown by way of illustration specific preferred embodiments. These embodiments are described in sufficient detail to enable those skilled in the art to practice them, and it is to be understood that other embodiments may be utilized and that mechanical, chemical, structural, electrical, and procedural changes may be made without departing from the spirit and scope of the present disclosure. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of embodiments of the present invention is defined only by the appended claims.

The paragraph beginning on page 4, line 28.

A9 Embodiments of the present invention provide a solution to thickness, weight, and/or rigidity limitations in an IC package, and to loop induction problems that are associated with prior art IC packages, by substituting a flexible tape for a rigid organic package substrate. In one embodiment, an IC is mounted on a flexible tape substrate using a ball grid array (BGA) arrangement. Other mounting arrangements, including lead bonding, can be used in conjunction

with or in place of BGA mounting. The flexible tape can comprise one or more layers, conductive traces, and patterns of lands. Various embodiments are illustrated and described herein, including methods of fabrication, as well as application of the flexible tape package to an electronic assembly, an electronic system, and a data processing system.

A⁹
The paragraph beginning on page 5, line 13.

A¹⁰
Electronic system 1 is merely one example of an electronic system in which embodiments of the present invention can be used. In this example, electronic system 1 comprises a data processing system that includes a system bus 2 to couple the various components of the system. System bus 2 provides communications links among the various components of the electronic system 1 and can be implemented as a single bus, as a combination of busses, or in any other suitable manner.

The paragraph beginning on page 6, line 14.

A¹¹
Among various embodiments, system 1 could be a hearing aid, a pacemaker, a wristwatch, a pager, a cellular phone, an Internet appliance, a personal digital assistant (PDA), or a palmtop computer. However, many other different embodiments can also take advantage of the relatively low stack height, relatively low weight, and relatively high degree of flexibility of electronic packaging provided by embodiments of the present invention.

The paragraph beginning on page 9, line 7.

A¹²
Substrate 130 can be of any type, such as a printed circuit board (PCB) or card, a motherboard, or any other type of packaging element. Substrate 130 can be a multi-layered substrate or a single-layered substrate. Embodiments of the present invention are not to be construed as limited to any particular type of substrate 130 or to any particular method of coupling substrate 120 to substrate 130. Substrate 130 can optionally have lands (not shown) on its lower surface for attachment to an additional substrate or other packaging structure.

The paragraph beginning on page 14, line 21.

A13 Embodiments of the present invention provide for a lightweight electronic package, in several different embodiments, and for methods of manufacture thereof, that minimize the thickness of the package, and that offer some degree of flexibility and/or of moldability. Loop inductance within the package is also reduced, because conductive paths through the flexible tape substrate are shorter than they are through an organic substrate.

The paragraph beginning on page 14, line 27.

A14 An electronic system and/or data processing system that incorporates one or more electronic assemblies that utilize the present disclosure can be produced in configurations having reduced thickness and weight, and with enhanced flexibility and electronic performance, and such systems are therefore more commercially attractive.

The paragraph beginning on page 15, line 3.

A15 As shown herein, the present disclosure can be implemented in a number of different embodiments, including an electronic package substrate, an electronic package, an electronic system, a data processing system, one or more methods of fabricating a flexible tape package, and one or more methods of fabricating a flexible tape package assembly. Other embodiments will be readily apparent to those of ordinary skill in the art. The elements, materials, geometries, dimensions, and sequence of operations can all be varied to suit particular packaging requirements.

The paragraph beginning on page 15, line 11.

A16 For example, while an embodiment of an IC is shown in which signal traces are provided around the periphery and in which power supply traces are provided at the die core, the disclosure is equally applicable to embodiments where signal traces and power supply traces are provided anywhere on the die.

The paragraph beginning on page 15, line 15.

A17 Further, embodiments of the present invention are not to be construed as limited to use in ball grid array (BGA) packages, and they can be used with any other type of IC packaging technology where the herein-described features of the present disclosure provide an advantage, e.g. land grid array (LGA), chip scale package (CSP), or the like.

The paragraph beginning on page 16, line 4.

A18 FIGS. 1 through 10 are merely representational and are not drawn to scale. Certain proportions thereof may be exaggerated, while others may be minimized. FIGS. 1 and 3-12B are intended to illustrate various implementations of the invention embodiments that can be understood and appropriately carried out by those of ordinary skill in the art.

The paragraph beginning on page 16, line 9.

A19 Although specific embodiments have been illustrated and described herein, it will be appreciated by those of ordinary skill in the art that any arrangement that is calculated to achieve the same purpose may be substituted for the specific embodiment shown. This application is intended to cover any adaptations or variations of embodiments of the present invention. Therefore, it is manifestly intended that the invention embodiments be limited only by the claims and the equivalents thereof.